Special Day on Moduli Space

Saturday April 11, 2015, Pittsburgh

Schedule

Location - 427 Thackeray Hall

9:30 – 10:00 - Welcome and Coffee

10:00 – 11:00 - Siu-Cheong Lau
Open Gromov-Witten invariants and mirror symmetry

Abstract: Given a symplectic manifold X and a Lagrangian submanifold L, the open Gromov-Witten invariants are the countings of open Riemann surfaces bounded by L. Rigorously they are defined by integrating over the moduli space of stable maps. In this talk I will discuss how open Gromov-Witten invariants are involved in the study of SYZ mirror symmetry, Fukaya category and its deformation theory.

11:10 – 12:10 - Babak Haghighat
Topological Strings on Calabi-Yau fourfolds and modular forms

Abstract: I will review mirror symmetry and the computation of genus zero Gromov-Witten potentials for Calabi-Yau fourfolds. This involves the definition of the topological string and its three-point and four-point correlation functions. Furthermore, I will elaborate on the ring-structure of the chiral-ring algebra. Then we will proceed to discuss examples of compact Calabi-Yau fourfolds which are K3-fibrations. In this context the Gromov-Witten potentials can be related to generating functions for Noether-Lefschetz numbers associated to families of algebraic K3 surfaces.

12:10 – 2:00 - Lunch

2:00 – 3:00 - Yingying Zhang
On the complex deformation of Kahler-Einstein manifolds

Abstract: Based on the Kodaira-Spencer-Kuranishi's theory, I will discuss the infinitesimal deformation of the complex structures on a closed Kahler-Einstein manifold. A new gauge will be introduced to solve the obstruction equation for the complex deformation. As applications, I will give the geometric quantization of the Weil-Petersson metric on the moduli space and also discuss an obstruction of deforming the Kahler-Einstein metric in the Fano case.

3:10 – 4:10 - Changyong Yin
Quantum correction and the moduli spaces of Calabi-Yau manifolds

Abstract: We introduce quantum correction for the Teichmuller space of polarized Calabi-Yau manifolds. Under the assumption of vanishing of weak quantum correction, we show that the Teichmuller spaces, with the Weil-Petersson metric, are locally Hermitian symmetric spaces. For Calabi-Yau threefolds, we prove that vanishing of strong quantum correction is equivalent to that the image of the Teichmuller space under the period map is an open submanifold of a globally Hermitian symmetric space.